NOTE XXX.

NEW SPECIES OF THE GENUS EUPHROSYNE FROM THE SIBOGA-EXPEDITION, WITH A TABLE OF THE SPECIES HITHERTO KNOWN

BY

Dr. R. HORST.

Since the publication of Ehlers' »Borstenwürmer" and Baird's »Contributions towards a Monograph of the Amphinomacea" [1]), our knowledge of this genus of Annelida much increased, especially by Johnson's »Preliminary account of the marine Annelids of the Pacific coast" [2]) and »The Polychaeta of the Puget Sound region" [3]) and by Ehlers' description of »Die Polychaeten des magellanischen und chilenischen Strandes" [4]). The Siboga-expedition in the Malay Archipelago also had the good luck to collect a rather great number of *Euphrosyne*-specimens, of which only a single one could be referred to a known species (*E. superba* Marenz.), whereas for the remaining ones nine new species must be established, which are summarily described in the present note. Among these are some small, interesting species (*E. affinis*, — *hystrix*, — *maculata*, *pilosa*, — *pelagica*, — *sibogae*), which by the presence of

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1) Journal Linn. Soc., Zoology, Vol. X, 1870, p. 215.

2) Proceed. California Acad. of Sciences, (3) Zool. Vol. I, 1897, p. 153.

3) Proceed. Boston Soc. Nat. Hist. Vol. XXIX, 1901, p. 381.

4) Festschrift k. Gesellsch. d. Wissensch. Göttingen, 1901.

enlarged eyes, of elongated bristles in the neuropodium and of a transparent body show a marked pelagic character[1]), the other species of this genus having a more sedentary manner of living. As proved by the table added hereafter, the number of known species now amounts to twenty-six.

Euphrosyne maculata, n. sp.

A single specimen at Station 296, Noimini, South coast of Timor.

A pelagic annelid with a slender body, measuring 25 mm. in length and 7 mm. in breadth. The number of its segments amounts to 40. The bare medio-dorsal region is very narrow, only $1^1/_2$ mm. broad. The caruncle reaches to the middle of the fifth segment and carries at its dorsal and ventral sides a pair of rather large eyes. The median tentacle, arising between the dorsal eyes, is furnished with a short terminal joint and measures but one fourth of the total length of the caruncle; the ventral eyes are flanked on each side by a short antenna. Each parapodium is provided with twelve branchial arbuscles; they consist of a short main stem, that is marked with a black spot and dichotomously divides into numerous branches, which are not dilated at the tip. The lateral cirrus is situated between the second and third branchiae (counted from de medio-dorsal line) and is only a trifle shorter than these; the median cirrus, though contracted, appears to be somewhat shorter and carries also a black spot like the gills do. A transverse row of bifid bristles in front of the ten median branchiae, most of them shorter, some as long as these; among them some ringent bristles of the type of *E. foliosa*[2]). The neuropodium has an auricular anterior lip and is furnished with a fascicle of forked setae, some of which are slender and much elongated, extending far beyond the branchiae.

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[1]) Caullery et Mesnil, les Formes épitoques et l'évolution des Cirratuliens, Ann. Univ. Lyon, fasc. XXXIX, 1898, p. 174.

[2]) I think we can recognize two kinds of the remarkable serrated bristles, that characterize the genus *Euphrosyne*: some of them (as in *E. borealis*) not much deviate from the common bifid bristle, by having both limbs of the fork only slightly bent and thickened, while in others (as in *E. foliosa*) the shortest limb of the fork is more or less club-shaped and the longest one strongly curved and enlarged.

Euphrosyne obiensis, n. sp.

On the reef near Laiwui (Obi major) a rather large Euphrosyne was collected, that I first thought to be identical with *E. Mastersii* from Darnley-island, described by Haswell; it measures 30 mm. in length and 10 mm. in breadth. The number of its segments amounts to 41. The bare median field of the dorsum is a trifle smaller than its lateral parts, which are covered with branchiae, and shows in the middle of each segment a spot of dark pigment. The elongated, oval caruncle extends over five segments and carries an elevated keel in the middle; in front of it a short, thick antenna is inserted, measuring only twice the diameter of the eyes. Each parapodium carries a series of nine arborescent gills, consisting each of a short, main stem, rapidly dividing into numerous branches, which are dilated at the tip. The lateral dorsal cirrus is situated between the second and third gill, having about the same length as these; the median one is blunt and somewhat shorter. The series of dorsal bristles extends only till in front of the fourth branchia; the ringent setae, of the type of *E. foliosa*, are gathered in a median group. The neuropodium carries a fascicle of stout, bifid bristles, of which the short spur measures only one fifth of the long fork.

Euphrosyne longesetosa, n. sp.

At Station 310, 8° 30′ S, 119° 7′ 5 L. E., at a depth of 73 M. a small Euphrosyne was dredged, obvious by the enormous length of its dorsal bristles. The oval body has a length of about 10 mm., its breadth being 6 mm. (the bristles included). The number of its segments amounts to 24. The bare medio-dorsal region measures about one fourth of the total breadth. The caruncle is three-lobed; it consists of a broad, elevated keel, extending till the anterior half of segment V, and of two lateral bands, reaching the posterior margin of the fourth segment. The eyes are small; the stout, unpaired tentacle, inserted between them, has a long, slender terminal joint, stretching as far as the end of the lateral bands. Each parapodium carries ten cirriform branchiae; the eight lateral ones stay crowded next to each other, whereas the two median ones are separated by a rather great distance. Both dorsal cirri are somewhat longer than the branchiae; the lateral one of them is situated between the second and third gill. The dorsal fascicle contains two kinds of forked bristles; some of them, placed in a single series directly in front of the branchiae, are nearly as long as these and have the shaft covered with small, triangular spines. However the greater part of them are much stouter, thrice as long as the branchiae and have their tips impregnated with calcium carbonate. The ringent bristles are of the type of *E. foliosa.*

The neuropodium carries a tuft of bifid bristles of different length; however the longest of them measure only one third of the length of the stout dorsal ones.

Euphrosyne sibogae, n. sp.

At Station 40, near the Paternoster-islands, with the townet several specimens of a small Euphrosyne were collected; the largest of them measure 10 mm. in length and 3 mm. in breadth (the bristles not included). The bare medio-dorsal field is rather narrow, in some specimens hardly visible. The number of its segments amounts to 26. The caruncle is oblong and narrow, its breadth measuring about one fourth of its length; it extends over five segments and reaches the anterior part of the sixth one. In front of the large dorsal eyes, situated in the anterior half of the caruncle, a cylindrical cirrus, with a short conical joint, is inserted, stretching not far beyond them. The eyes on the ventral side of the caruncle are also exceedingly developed. Each parapodium carries seven to eight very ramose branchial arbuscles, whose branches are elliptically dilated at the tips; the latter contain some cells highly refracting the light, probably of a glandular nature, which secrete mucus. The lateral dorsal cirrus, placed between the second and third branchiae, is slender and projects a great deal beyond the tips of the gills, whereas the median one is much shorter. There is a single series of bifid bristles in front of the five median branchiae, somewhat longer than these; among them are some ringent bristles of the type of *E. foliosa.* The neuropodium has a rounded anterior lip and contains a fascicle of forked bristles, some of which are very slender and elongated; their longest limb is nearly straight, faintly serrated and about six times as long as the short one.

Euphrosyne pelagica, n. sp.

Station 40, Paternoster-islands.

Among the numerous specimens of *E. sibogae* I met with some individuals of an other small species, already recognizable to the naked eye by their dark, brownish, transverse series of gills. The largest specimen measures about 8 mm. in length, its breadth being $2^1/_2$ mm. (the bristles not included). The breadth of the bare dorso-median field is about one fourth of that of the body. The number of the segments amounts to 30. The caruncle extends over four segments; it has an elevated median keel, stretching somewhat beyond the lateral lobes. There are large, oval eyes at the dorsal as well as at the ventral side of the caruncle; in front of the former the unpaired tentacle is inserted, with a short, conical terminal joint, stretching not far beyond the eyes. Each parapodium carries a series of seven short and stout branchial arbuscles, dividing in two branches, which carry on their tip a tuft of 3 to 6 digitate processes. The lateral dorsal cirrus, situated between the second and third gill, is about as long as these; the median one is somewhat shorter. In front of the branchiae a double row of bifid bristles projects, partly stretching beyond their tips; in the median portion of the row some ringent bristles are present, of the type of *E. borealis.* The neuropodium is provided with rounded lips and carries a fascicle of bristles, some of which are very elongated, having a length equal to half the breadth of the body.

Euphrosyne mucosa, n. sp.

At Station 109, in the Sulu-Archipelago, at a depth of 13 M., a small Euphrosyne was dredged, the upper side of the body covered with much mucus and containing ripe ova. The oblong oval body has a length of about 7 mm., whereas its breadth measures 4 mm. (the bristles included). The bare medio-dorsal field is narrow, its diameter being only one eighth of the breadth of the body. The number of its segments amounts to 27. The caruncle is rather broad and reaches the anterior region of the fifth segment; it consists of a thick, cylindrical, median ridge and two plane lateral lobes, which are somewhat narrower. The eyes are not very large; in front of the dorsal ones the short, thick tentacle arises, furnished with a small terminal joint and measuring a fourth of the total length of the caruncle. The ventral eyes are flanked by a small antenna. Each parapodium carries a transverse group of eight stout branchial arbuscles, not arranged in a single series; their short stem divides in numerous cylindrical processes, which are not dilated at the tip. The lateral dorsal cirrus, situated opposite to the third gill, has about the same length; the median cirrus is somewhat shorter. In front of the branchiae a double series of forked bristles projects, the longest of which extend somewhat beyond their tips, whereas the shortest ones only reach half the length of the gills; the forks of those bristles are vitreous and impregnated with calcium carbonate. Among them are numerous ringent bristles of the type of *E. foliosa.*

The neuropodium has an ear-shaped anterior lip and contains a fascicle of bifid bristles of different length, but not stretching far beyond the gills.

Euphrosyne hystrix, n. sp.

Near Sailoes ketjil with the townet two small specimens were collected of an Euphrosyne-species, closely allied to *E. affinis*. The short oval body measures $5^1/_2$ mm. in length and about 2 mm. in breadth. The bare medio-dorsal field is very narrow, hardly visible by the bristles from both sides extending over it and crossing each other. The number of its segments amounts to 29. The caruncle is rather broad and reaches the fifth segment; its median keel hardly extends beyond the lateral lobes. There are large dorsal and ventral eyes; the unpaired conical tentacle, inserted between the former of them, has a short terminal joint and does not stretch far beyond the eyes. Each parapodium carries seven branchial arbuscles, with a short stem, dichotomously dividing in numerous tapering processes, not dilated at the tip. In front of the branchiae a series of stout, bifid bristles projects from the dorsum, the longest, median ones bending over the bare dorsal field; among them only a single ringent bristle could be detected, of the type of *E. foliosa*. The neuropodium has a rounded triangular anterior lip and contains a fascicle of bristles, some of which are very elongated, equal to half the breadth of the body.

Euphrosyne affinis, n. sp.

At Station 40, near the Paternoster-islands, among the swarm of *E. sibogae*, some individuals of an other pelagic species were found, characterized by a slender body, tapering at its anterior and posterior extremities. The length of the largest specimen is $8^1/_2$ mm., its breadth $2^1/_2$ mm. (the bristles not included). The bare medio-dorsal field is rather broad, almost a third of the total breadth. The number of its segments amounts to 28. The caruncle has an oval shape and is about twice as long as broad; it extends over four segments, the median keel reaching the fifth one. There are large eyes at the dorsal and ventral side of the caruncle; in front of the former the unpaired tentacle is inserted, with a small conical terminal joint, stretching only a little beyond the eyes. Each parapodium carries six slender gills, faintly branched, their terminal processes tapering towards the tip. The lateral dorsal cirrus is situated between the second and third branchiae and nearly as long as these; the median one is shorter. Both cirri as well as the gills are characterized by the presence of numerous small bodies, highly refracting the light. In front of the branchiae a double series of forked bristles projects; among them some ringent bristles, of the type of *E. foliosa,* are crowded together in a group corresponding to the region between the dorsal cirri. The neuropodium has a rounded triangular anterior lip; its fascicle contains some slender, elongated bifid bristles, much longer than the gills, with their longest fork faintly serrated near the tip.

Euphrosyne pilosa, n. sp.

Among the specimens of *E. sibogae*, from Station 40, near the Paternoster-islands, I found three individuals of an other pelagic species, recognizable by the high development of its bristles. The body of the largest specimen measures $8^1/_2$ mm. in length and $2^1/_2$ mm. in breadth (the bristles not included). The diameter of the bare medio-dorsal field is about one third of the total breadth. The number of its segments amounts to 22. The caruncle is three-lobed and extends with its lateral lobes over three segments, whereas the median keel reaches the fourth one. The unpaired tentacle, arising in front of the large dorsal eyes, is very long; with its slender terminal joint it stretches till the posterior end of the median caruncle-lobe. Each parapodium carries a series of six cylindrical gills, which do not show any branching. The dorsal cirri are placed in a series, anterior to that of the branchiae; both are long and slender, projecting beyond them. The position of the lateral cirrus corresponds to the region between the third and fourth gill. In front of the branchiae is a double row of forked bristles, the shaft of which is beset with small spines; among them some ringent bristles, of the type of *E. foliosa*, are to be found. The neuropodium has a rounded, ear-shaped, anterior lip and is provided with a fascicle of bristles, some of which are very elongated, equal to two thirds of the breadth of the body.

EUPHROSYNE.

A. No branchiae.
cirrata Sars; Christiania Vidensk. Selsk. Forh. 1861, p. 55.
Manger near Bergen.
cirrata, var. *magellanica* Ehlers; Die Polychaeten des magell. u. chilen. Strandes, p. 35, pl. I, figs. 1—3.
Cap Valentyn, Puerto Harris.
B. Branchiae present.
a. 5 to 6 pairs of branchiae.
α. Branchiae not ramose.
pilosa, n. sp.; pelagic annelid. Malay Archipelago.
setosissima Ehlers; loc. cit. p. 36, pl. I, figs. 4, 5. Puerto Harris.
β. Branchiae ramose.
ββ. Tips of branchiae tapering.
affinis, n. sp.; pelagic annelid. Malay Archipelago.
notialis Ehlers; loc. cit. p. 38, pl. I, figs. 12—15. Magellan Strait.
βββ. Tips of branchiae expanded.
arctia Johnson; Proc. California Acad. Sc. (3) Zool., vol. I, 1897, p. 159, pl. V, figs. 5—7. Monterey Bay.
armadillo Sars (*lanceolata* Mc Intosh); Brit. Annelids, part II, p. 238. Bergen, W. Coast of Ireland.
armadilloides Ehlers; loc. cit. p. 37, pl. I, figs. 6—8. Punta Arenas.
b. 7 to 8 pairs of ramose branchiae.
α. Tips of branchiae not expanded.
aurantiaca Johnson; loc. cit. p. 157, pl. V, figs. 1—4. San Pedro.
borealis Oersted; Mc Intosh, Challenger Report, Zoology, vol. XII, Annelida polychaeta, p. 5, pl. I, figs. 2, 3; pl. I A, figs. 4—6.
Greenland, Halifax.
ceylonica Michaelsen; Jahrb. Hamburger wissensch. Anst. IX, 2, 1892, p. 1, figs. 1—4. Ceylon.

hystrix, n. sp.; pelagic annelid. Malay Archipelago.

mucosa, n. sp. Malay Archipelago.

superba Marenzeller; Denkschr. math.-naturw. Kl. Akad. Wien, Vol. XLI, 1879, p. 2, pl. I, fig. 1. Japan.

β. Tips of branchiae expanded.

foliosa Aud. & M. Edw. (*Audouini* Costa, *mediterranea* Gr., *racemosa* Ehl.); Mc Intosh, Brit. Annelids, part II, 1900, p. 234, pl. XXIV, fig. 3. England, France, Mediterranean.

foliosa, var. *Robertsoni* Mc Intosh; loc. cit. p. 240, pl. XXXV, figs. 4, 6, 7; pl. XXXVII, fig. 33. Firth of Clyde.

foliosa, var. *intermedia* St. Joseph; Ann. Sc. Nat. (7) Zool. Vol. V, 1888, p. 191, pl. VIII, fig. 56. Dinard.

laureata Sav.; Horst, Notes Leyden Museum, Vol. VII, 1886, p. 171, pl. VII, fig. 15; pl. VIII, figs. 8, 9. Red Sea, Philippines, Timor.

myrtosa Sav.; Ehlers, Nachr. k. Ges. Wissensch. Göttingen, math. physik. Kl. 1897, p. 163. Red Sea, Sansibar.

pelagica, n. sp.; pelagic annelid. Malay Archipelago.

sibogae, n. sp.; pelagic annelid. Malay Archipelago.

triloba Ehlers; Florida-Anneliden, Mem. Museum Comp. Zoology, Harvard College, Vol. XXXI, 1887, p. 31, pl. IV. East Key, Carysfort Reef.

c. 9 to 10 pairs of branchiae.

α. Branchiae not ramose.

longesetosa, n. sp. Malay Archipelago.

β. Branchiae ramose.

ββ. Tips of branchiae not expanded.

heterobranchia Johnson; Proc. Boston Soc. Nat. Hist. Vol. XXIX, 1901, pl. VI, figs. 60—66. Puget Sound.

βββ. Tips of branchiae expanded.

Mastersii Haswell; Proc. Linn. Soc. N. S. Wales, Vol. III, 1879, p. 341. Darnley Island.

obiensis, n. sp. Malay Archipelago.

d. 11 pairs of branchiae; tips of branchiae expanded.

capensis Kinb. (*polybranchia* Schm.); Grube, Reise der Novara, Anneliden, p. 6, pl. I, fig. 1; Mc Intosh, Challenger Report, Annelida Polychaeta, p. 1, pl. II, fig. 5, pl. I A, figs. 1—3. Cape Town; St. Paul.

e. 12 pairs of branchiae; tips of branchiae not expanded.

maculata, n. sp.; pelagic annelid. Malay Archipelago.

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